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Art of auditing the key to the success of HACCP

Dr. N. Anandavally

INTRODUCTION

Throughout the world the food business operations are quickly changing from a production-driven into a consumer-driven business. The market is becoming more complex; the buying behaviour of consumers is more unpredictable, while more and more stringent demands must be met in order to avoid loss of consumer confidence. The food industry is facing tighter constraints because of increasing manufacturer's product liability and stricter environmental legislation. Care for the environment and animal-friendly production methods are becoming more important

Health of human is influenced by the consumption of foodstuffs. On the one hand the environment is effected by the pesticides, manures, fertilizers and combustion gasses as a result of the food production. On the other hand the increasing levels of contaminants in the environment can indirectly effect the human health through consumption of contaminated foods and /or cause a direct health risk through environmental pollution.

Significant changes are taking place in animal husbandry, large scale food production and distribution methods. The increased use of a range of raw materials and products originating from a wider range of countries has increased the potential for a geographical spread of disease associated with particular contaminants. Despite the progress in medicine, food science and the technology of food production, illness caused by food-borne pathogens continues to present a major global problem in terms of both public health and economic significance. Only a small proportion of cases of food-borne illness is brought to the attention of food inspection, control and health agencies.

FOOD SAFETY - THE PRESENT GLOBAL STATUS

As trade in food commodities expands globally, food safety can no longer be considered only a mere domestic issue. With the establishment of the WTO, standards, guidelines and recommendations of the Codex Alimentarius commission are regarded as benchmarks for international trade. The agreements under the WTO require the development of modern food control and safety programmes by national Governments. Proper food control measures also reduce losses and can stimulate trade in food products, increase economic returns and thereby improve nutritional well-being.

OBJECTIVES OF THE CURRENT FOOD CONTROL SYSTEM

Modern government controls related to food quality and safety generally have three objectives:

1. to assure a safe, wholesome food supply and an acceptable level of consumer nutrition
2. to foster (or at least not simple) innovation and variety in the food supply
3. to facilitate the necessary growth and commerce in food products, including exports.

The first objective is primary and often the only one specifically mentioned in statutes. But the others are present, either in the basic need to have and preserve a food supply, in the need for jobs, in the omission of draconian standards, in provisions for due process, and in the recognized day-to-day need to consult with industry. The perceived importance of these three basic objectives have shifted over the years as India has successfully passed through several internal crises and as India's policies have become

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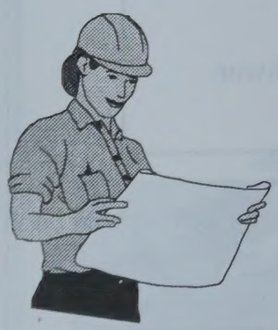
more outward looking. The food control system has not quite kept pace with these changes. It has now become essential to pay attention to the facilitation of the export of agriculture and food products. The sanitary and Phytosanitary (SPS) agreements and the new World Trade Organization have indicated the path to follow to achieve ready acceptance in world markets. The SPS agreements call upon members to harmonise their sanitary and phytosanitary measures with international standards (Codex Alimentarius Standards).

For food safety, the SPS agreement requires harmonization of food standards, food additive ADIs, pesticide and animal drug residues, contaminant tolerances, methods of analysis and sampling and codes and guidelines for hygienic practices. So far, India has given little attention to these matters.

ENFORCEMENT ASPECTS FOR FOOD SAFETY (HACCP)

The seafood sector, the only sector where regulatory control is in existence and HACCP is implemented to a certain extent need to be further strengthened through a proper and effective audit of the system. The regulatory audit team needs to be developed and well trained to enable them to undertake the HACCP audit scientifically and at adequate frequencies. The inspection approach needs to be changed to an audit approach which really needs a culture changes through adequate training and practice. There shall be a core team who shall understand the fact that HACCP audit is a technical and scientific challenge and shall be divorced of other routine inspection duties which is fundamental to any audit.

The audit shall be designed based on risk related to the product where the risk assessment is yet to be thought of. The understanding of HACCP based on present international approach should be discussed and decided among regulators. This is the situation of a sector where at least lot of training and input have gone due to the export market requirements



AUDIT, WHAT IT IS? INSPECTION – DEFINITION

"The process of measuring, examining, testing to compare a characteristic of an item with specified requirements"

QUALITY AUDIT – DEFINITION

" A systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives"

(ISO 8402)

FOOD SAFETY AUDIT - DEFINITION

" An audit is a planned and documented activity performed in accordance with written procedures to verify, by investigation of objective evidence, that a food safety management system has been developed, documented and effectively implemented."

(ANZFA)

Regulatory assessment

A governmental activity to obtain evidence that the seven HACCP principles have been effectively applied and the HACCP plan and prerequisites correctly implemented and that the system has been maintained.

Guidance on regulatory assessment of HACCP - The report of a Joint FAO/WHO Consultation on the Role of Government Agencies in Assessing HACCP (WHO/FSF/FOS/98.5)

ESSENTIAL FEATURES OF AN AUDIT

Someone qualified and experienced for the task perhaps helped by a colleague, visits an organization to find out if management is controlling all food safety or quality relevant activities and doing what it claims.

In preparing for the audit, the auditor will have to obtain information about the company's quality system and will have to make a careful selection of activities to be investigated to best fulfill the objectives of the audit.

In carrying out the audit the auditor will look for

- Evidences that the system complies with applicable standard
- Evidences of effective implementation of the declared system

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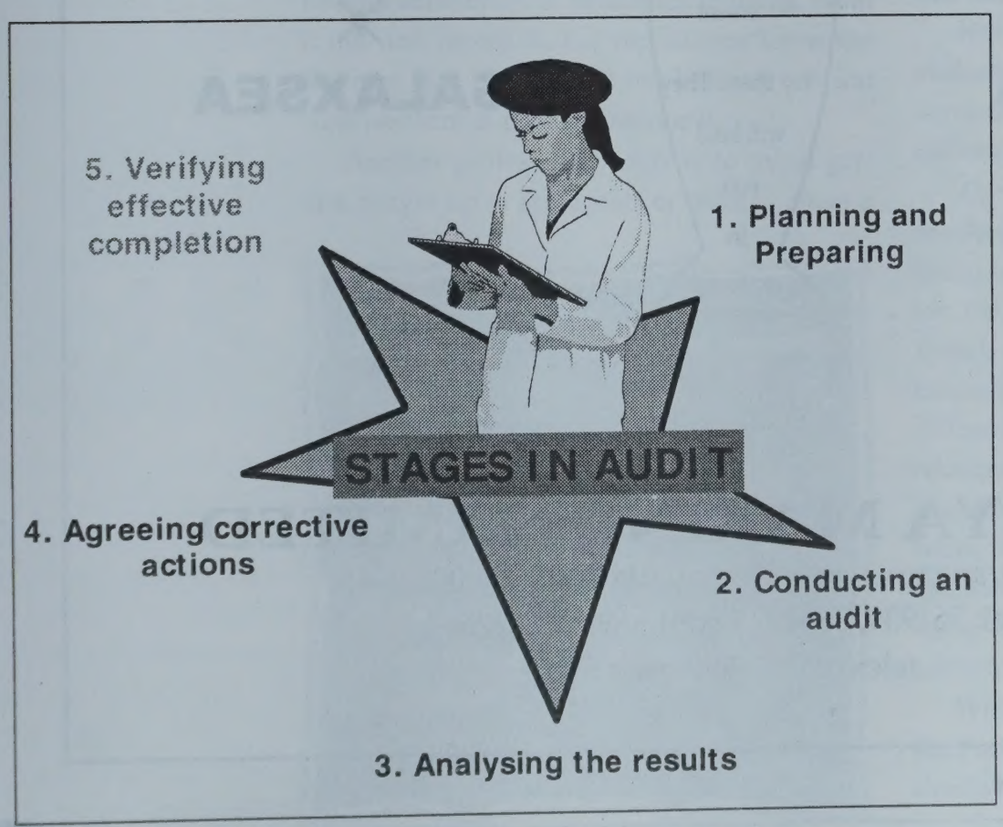
- Evidences of effective control of the process

When evidence is obtained that the auditee is not complying with stated practices as defined in the quality system documents, the auditor will report non conformity. Having completed the investigation , the auditor will report and explain the non conformities and conclusions to the auditee management. The client and the auditee will subsequently receive a report of the audit.

TYPES OF AUDIT

All audit can be classified into one of three types depending upon the relationship between auditor and auditee:

- **A first party audit.** (an internal audit) Carried out by a company itself, using its own staff, specialist subcontractor as auditor.
- **A second party audit.** (An external audit) Carried out on behalf of the customer on supplier or potential supplier of goods or services. (An Extrinsic) Carried out by customer to audit the supplier.
- **A third party audit.** A company has an independent organization to carry out an audit with an objective of obtaining approval or certification of compliance.



AUDIT DEPTH

Audit may be carried out according to a number of established methods, depending on the purpose of the audit. The methods are as follows:

- **System audit.** Evaluates whether the processor has developed the system to meet a given standard's requirements and any additional contractual and legal obligations. A system audit is often undertaken to develop an overview of the existing business performance or during development of the new operation to ensure that the business has the relevant plans and procedures for a given task. This usually involves the review of food safety control plans and procedural documents.

i. Plans and quality system exist
ii. Ensure plans achieves key policy and objectives
iii. System design meets requirements of the given standard

- **Compliance audit.** The compliance audit is more limited and will verify that the given system is adhered to, by an evaluation of the objective evidence from the operation of a given task

i. Assess evidence to prove that system has been implemented as documented
ii. Evaluate data to measure the effectiveness of system
iii. Identify areas of non compliance, potential improvements or corrective actions

AUDIT SCOPE

A given audit scope may cover all company activities e.g. full audit or only chosen sections e.g. partial or follow up.

Full audits: cover all of the company activities and departments in-

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volved for a given standard or contract to verify that all agreed systems and procedures are operational and effective.

Partial audit: are normally scheduled to review selected activities or department. Audits may focus on high risk activities or specific activities.

Follow up audit: ensure that agreed corrective actions are effectively implemented.

Auditor— sins and virtues

STAGES IN AUDIT

Auditors

The success of the audit will be dependent upon the inter personal skill attributes and behavior of the auditor.

An inspector should be qualified to perform the system audit. The experience and training will be part of the qualification of auditor.

One of the most important traits an auditor can have is to be unbiased. This must be remembered at all times during the audit, the main goal is to find out what actually goes on in the facilities and report only facts.

An inspector should have good interpersonal skills, should be able to communicate well with the auditee, fellow auditors and other regulatory agencies. Auditor should not be gloat in finding deficiency. If deficiency is found, point it out and record it. Let the auditee know the findings as it is found, do not keep secrets and surprise them at the exit interview.

Another professional traits is to avoid getting caught up in arguments or debates about a specific deficiency. Try to minimize disruptions of works for the people in the facility.

Should be:	Should never:
Observant	Compare auditee
Diplomatic	with others
Communicative	Be sarcrastic
Articulate	Be side tracked
Impartial	Swear
Thick skinned	Argue
Co operative	Criticise
Courteous	
Self discipline	

Conclusion

The successful application of HACCP in Seafood processing establishments very much depends on how well the system is being audited and is in compliance. HACCP fails because it is not properly applied; The HACCP plans are overcomplicated (too many CCPs); Only some of the seven principles are applied; The HACCP plan is only a 'paper exercise'; In most sectors the food operation is not ready for HACCP; No proper action is taken when a CCP can not be identified for a specific hazard; HACCP is not applied from origin of food (sea/farm) to consumption and Misunderstanding/misinterpretations of HACCP occurs very often.

The European Union Directives and Decisions related to fish and seafood safety causes problems and confusion in government bodies, industry and technicians. HACCP and prerequisite programmes were good in statement but not in systematic operations and were little managed .The challenge is to develop a framework, which is in line with the international understanding of food legislation, to ensure that fishery products are safe to eat.

HACCP Training activities, audits and the exchange of information between the inspection services in order to reach a higher level of uniformity and harmonized criteria are essential.

The areas for future Application of HACCP are Artisanal and Aquaculture sectors. More practical HACCP systems must be developed for the above sectors as well as for fishing vessels. The Technical problems are the application of HACCP and the confusion about the difference between Control Points and CCPs; relationship between hygiene programmes, Good Manufacturing Practices; the relationship between HACCP, Risk Assessment and Risk Management. HACCP is based on science. If no safety hazards, no need for a HACCP system, and HACCP will save money in such situations.

While applying HACCP from the 'Farm to the Fork' keep the principle of "KISS"(keep it simple & smile).

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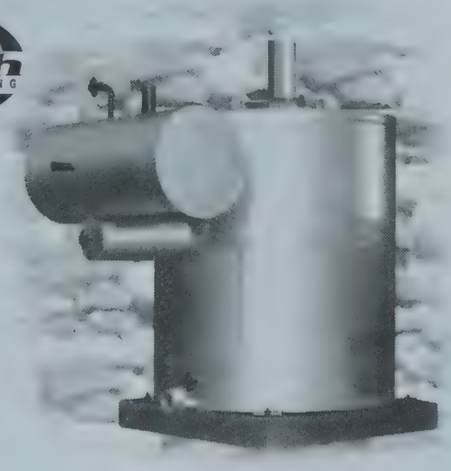

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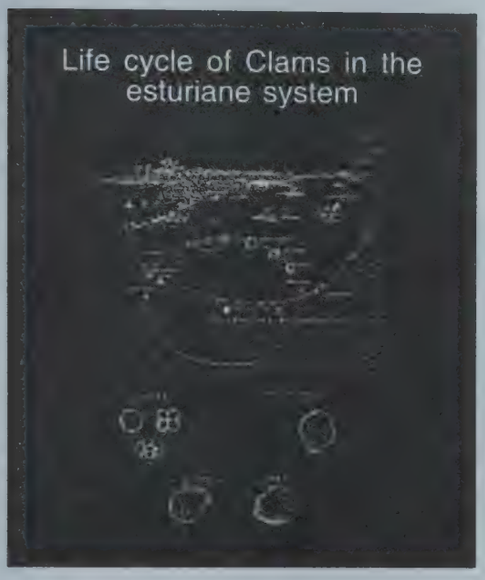
Clam Resources,

Culture Potential along the west Coast Maharashtra



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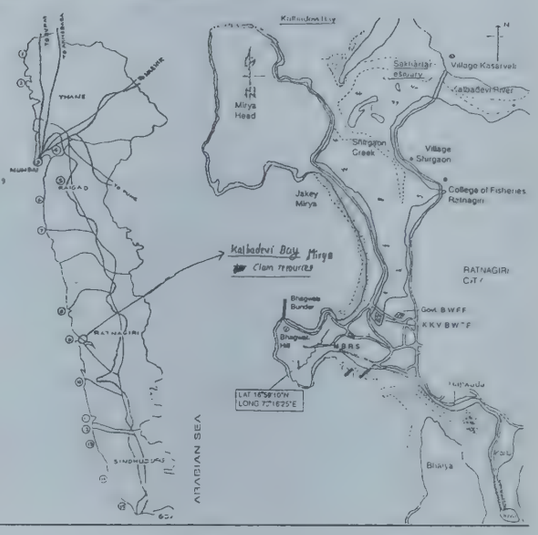

Introduction

Bivalves such as oysters mussels and clams are widely distributed both in tropical and temperate waters. In Recent years, they have emerged as delicacy and luxury food items in Japan, U.S.A, Western Europe and India.

The word clam doesn't refer to any particular taxonomic entity but it is used popularly to members of several bivalve families, which burrow into substratum with help of usually well developed foot. A few- clam species are also known to attach to the hard substrate with byssus thread.

Among the exploited bivalve resources of India, clams are the by far the most widely distributed and abundant and forms subsistence level fisheries all along Indian coast line

Clams are important species to the sea farmer in many coastal areas. They are not farmed as extensively as oysters but they have considerable farming potential because they are sessile. They feed low on food web and are in demand by consumers so that it is suitable for sea farming.

Clams are generally classified under Order - Heterodonta. They are characterized by heterodont hinge dentition, similar adductor mussels equal valves and smooth or concentricity ribbed equilateral shells with elongate, sub rectangular shapes.

Resources and Distribution of Clams on the Maharashtra Coast

A number of clam species belonging to the Family -Veneridae are exploited along Maharashtra Coast

Family- Veneridae

Venerida clams are the most Important in the clam fisheries of Maharashtra and three Genera namely Meretrix, Katelysia and Paphia are important

e.g Merdrix meretrix, Katelysia opima, Paphia malbarica

Habitat for Meretrix sandy substratum.

For Katelysia and Paphia Sandy, Muddy

Distribution along the Maharashtra Coast in several estuaries and bays especially Kalbadevi Estuary, Mirya, Bhatye of Ratnagiri.

Distinctive characters of cultivable species of the clams along the west coast of Maharashtra

Maharashtra is having around 720 Kms of coastal area .The coastal area is guarded by the Arabian sea. West coast of Maharashtra mainly contribute Following district .

1) Mumbai 2) Thane 3) Raigad 4) Ratnagiri 5) Sindhudurea

Estuaries along the west coast of Maharashtra are rich in Clam resources mainly the edible genus like Meretrix, Katelysia, Paphia which are exploited regularly on the large scale for food purpose.

Out of the above given Districts only the Ratnagiri and Sindhudurea district coast contributes the majority of Clams species. Following are the Characteristics of the Clams which are abundantly found along the

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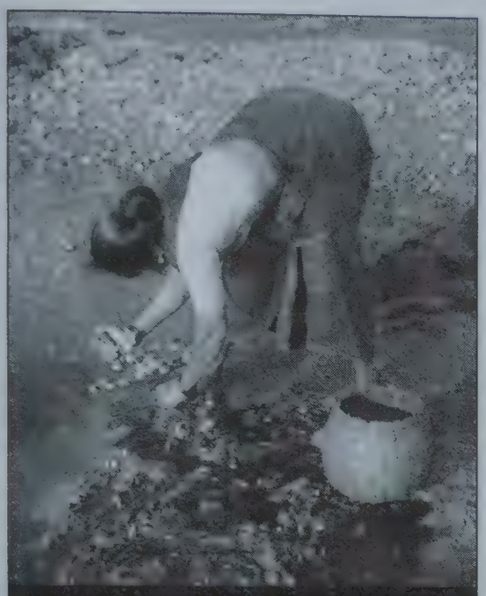

Harvesting clams from grow out ponds

FOLLOWING CHART SHOWS THE EXACT DISTRIBUTION OF CLAMS ON INDIAN COAST

Resources and Distribution

Sr.	State	Species	Estuary / Back waters
1.	Maharashtra	*Meretrix meretrix* *Katleysia opima* *Paphia malbarica*	In Maharashtra coast in several estuaries and Bays especially in Kalabadevi, Mirya, Bhatye
2.	Goa	*Meretrix casta*	All estuaries
3.	Karnataka	*Meretrix casta* *Meretrix meretrix* *Paphia malbarica* *Villorita cyprinoides* *Katelysia opima*	All estuaries Kundapur Mulky, Gurpur and and Udaypur Netravati, Kundapur and Swarna Coondapur, Uppunda and Sita
4.	Kerala	*Paphia malbarica* *Villorita cyprinoides*	Koduvally, Azzikal, Chittari Vembanad lake and all estuary
5.	Tamilnadu	*Meretrix casta*	Vellar and Pulicat
6.	Andhra Pradesh	*Meretrix costa* *Anadara granosa* *Meretrix meretrix* *Katelysia opima* *Paphia malbarica*	Bhiminipattanam and Kakinada bay
7.	Orissa	*Meretrix* sp.	Chilka lake and Sonapur Back waters
8.	Andaman	*Tridacna maxima* *Tridcna crocea* *Tridacna squmosa*	Andaman coast line

Maharashtra Coast.

Family Veneridae

1) Paphia malbarica (Chemnih) Local Name- Tasare

Characters

1) Shell concentricity grooved through the impressions.

2) Shell length is 1/3 rd times long than height.

3) Pallial sinus u shaped and very deep.

4) Three thick cardinal tooth.

S) Shell yellowish brown in color with grayish brown bands.

3) Meretrix (Linnaeus) Local Name- Lalva

Characters

1) It shows different color patterns and attains over a 60 millimeter length in anterioposterior axis.

2) Anterior cardinal tooth of left valve distinctly notched.

3) Pallial sinus very shallow.

4) Hinge delicate and weaker as compare to Meretrix casts.

C) Katelysia opima (Gmelin) Local Name - wati

Character

1) Shell in Inflated, solid and thick with smooth surfaces.

2) Shell is slightly longer than height and margin rounded.

3) Hinge has three strong cardinal teeth.

4) Tooth in left valve are in front of cardinal and corresponding dispersion on the right valve are absent.

5) Pallial sinus is deep and apex of sinus bluntly angular.

6) Shell pale yellowish brown or creamy and some time with purplish or grey markings.

Biology of important cultivable clams of Maharashtra Coast

Food and Feeding habit

Like oysters and mussels, the clams are filter feeders feed on the phytoplankton. Larvae can be fed with microalgae Isochrysis galbana.

Reproduction - Sexes are separate

Growth, Length at first maturity and spawning season

Following table gives an idea about the growth performance, length at first maturity and spawning season.

Culture

India having numerous estuaries and backwaters has immense potential to increase clams production by adopting scientific farming. By considering

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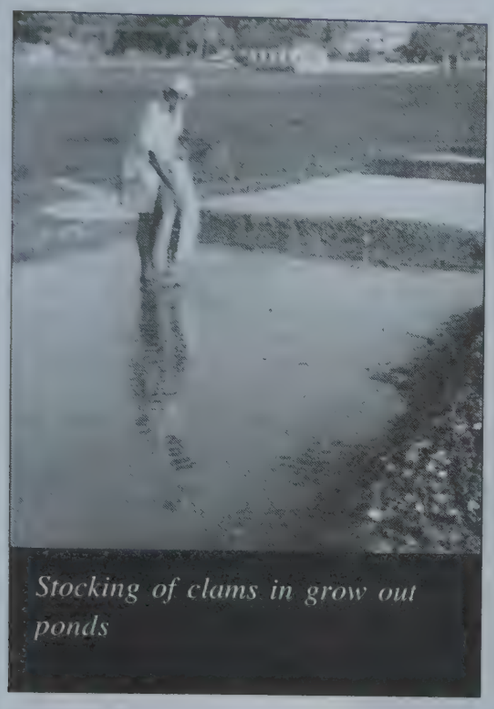

Stocking of clams in grow out ponds

Species	Growth			Lenght at first maturity (mm)	Spawning season
	Ist year (mm)	IInd year (mm)	Max. size (mm)		
Meretrix meretrix	29-47	61-63	91	21-26	March to June
Katelysia opima	22-26	40-43	-	11-20	October to November
Paphia malabarica	26-30	43-45	65	20	October to February

this, the CMFRI has established a hatchery at Tuticorin and developed the know-how for mass scale production of seed. There are good resources of clam species like Paphia malbarica, Katlysia opima and Meretrix meretrix which are having high market potential in India as well as in the export market but are found in limited quantities over restricted areas. Sufficient biological and ecological information from all estuaries is essential for culturing, these clams.

Seed Collection from nature of wild

In clam culture. seed collected from natural grounds are used. The clams seed are collected from natural beds measuring in 10 to 25 mm in length one month after the onset of spawning by sieving the sediment. After they are transported with the help of small boat are planted in the farm. In Maharashtra seed collection is done by a specially designed net locally called as 'Khonda'. (Fig. 1)

Hatchery production of seed

Hatchery seed production technology has been developed for Anadara granosa, Meretrix meretrix, Meretrix casta and Paphia malbarica.

Mature clams of 35 to 45 mm in shell length are used as brood stock. The broodstock is conditioned in unilateral water of salinity 25 ppt nd at temperature of 22 to 24°C and then transferred to spawning troughs. Spawning occurs both at higher water temperature of about 34°C and also at lower water temperature of about 24°C on transfer to the conditioning room after giving the thermal shock. Spat settlement takes place between 7th to 26th day after spawning. The clams spat attains 2 to 3 mm in shell length in the hatchery in two months after fertilization and then these spat are used for nursery rearing.

A survival rate of 15 to 20% in spat production in the hatchery is consider as satisfactory. In the hatchery unicellular algae such as Chaetoceros, Isochrysis galbana, Tetraselmis are given as food for the larvae and mixed microalgae reared in out door tanks are given as the food for the spat.

The availability of seed from the natural grounds is unpredictable, so CMFRI has established hatchery for clam seed production for under taking commercial culture of clams.

In Maharashtra for clam culture seed collection can be done from the natural grounds and then grow in grow out areas.

Site Collection

1) Clams are cultured on the bottom and there for the site selection depends upon the substrate available.

2) The occurrence of the natural clam populations is an indicative of suitability of site for culture with particular reference to the tide level, substratum and salinity

3) Farms are located in estuary, bays and other sheltered areas close to the shore.

4) About 1-2 hr exposure and low tide level is desirable as it is easy to remove the predators.

5) If exposure is too long then it result in poor growth due to reduced feeding and in summer there may be mortality due to desiccation.

6) Substratum prefer is varied from species to species e.g. Meretrix casta thrives well on the sandy bottom while the Anadara granosa, Paphia malbarica prefers the mud flat.

7) Salinity tolerance varies from species to species e.g. Villorita cyrinoides prefers a low saline water and few species tolerate prolonged low saline conditions which occur due to a heavy rain fall and freshwater drains from land .

8) Clam farms must be located in the areas where there is a little wave action.

9) Area prone to frequent changes of contour and vulnerable to pollution are avoided.

In Maharashtra, the area in which

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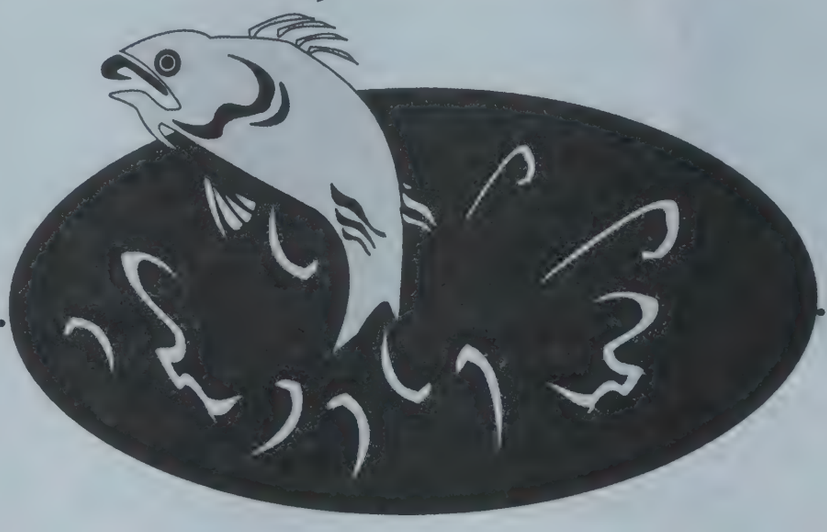

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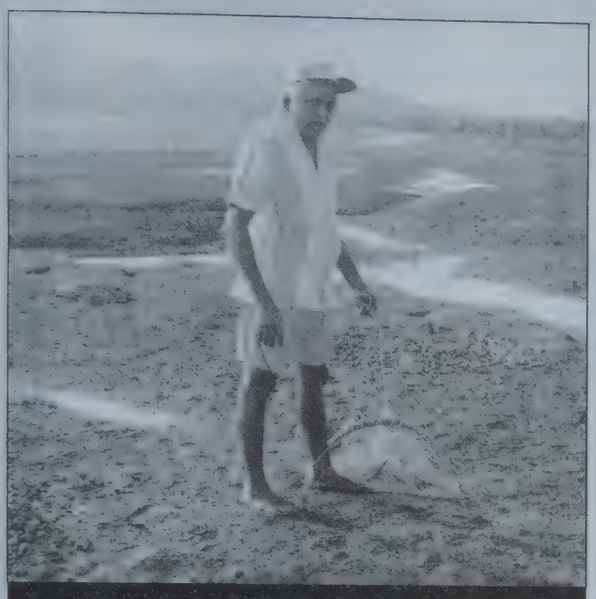
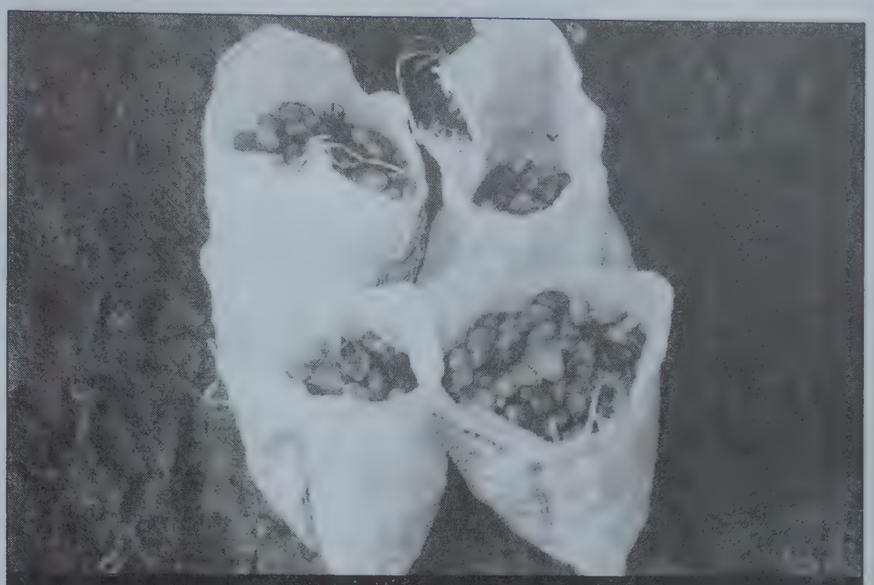


Net used for collecting clams



Packing of clams for transportation from grow out pond to market

this culture is carried out is Kalbadevi Estuary. The Kalbadevi Estuary is situated at Latitude of 16° 59' North and Longitude of 73° 26' lying to the north of Ratnagiri city. It is about 8 Kms away from the Ratnagiri, Kalbadevi estuary is contiguous with natural clam beds. The bottom of this estuary is characterized by spit sand which is better for growing the clam species.

Grow out culture (on bottom culture)

For grow out culture, first the ground is leveled and cleared of predators such as baring gastropods star fishes, crabs etc. The bamboo poles are planted on the boundary of farm as markers. The movement of clams are limited and in many areas fencing is not necessary. Synthetic fiber net pens are erected in USA to hold the clams within farms against strong water current and also to keep the predators away.

At high tide, seed measuring 10-25 mm in shell length are picked with help of hand operated net dredge and transported in small boats and planted in farm taking care to get even dispersal as far as possible.

Stocking density varies with species cultured and size of seed available. In case of Paphia malbarica stocking density of 200 No. /m2 is ideal for better growth and survival. (Experiment carried out by College of Fisheries, Ratnagiri).

A recent development in clam culture is the use of 10 mm mesh synthetic netting as a protection measure for young clam. After seeding the farm, the netting is laid and held in stretched position by stakes driven in to substratum at the periphery of farm. Except for watch and eradication of the predators no other maintenance job is necessary during grow out culture. (Fig. 2)

HARVESTING- Clams are harvested after 5 to 6 month either by hand picking or by use of hand operated dredge. In Local language of Maharashtra the instrument that is used for harvesting of clam is called as 'Kurund'. (Fig. 3)

PACKING -The clams, which are harvested, are packed in 5 kg. Jute bags, gunny bags. Afterwards clams can be transported from harvested place to market place. They can survive upto 12-15 hrs. The main market place for the clams are the near by areas where these clams are not available e.g. In Maharashtra the clams from Kalabadevi estuary are marketed to Bombay, Thane, Pune, Kolhapur which are the main metropolitan cities in Maharashtra. (Fig. 4)

Utilization

1) This clams are mainly utilized for food purpose.

2) Also the shell are used for the manufacturing of the cement, calcium carbonate, sand lime bricks and lime.

3) Shell lime is used for the manuring coffee plantation.

4) Truckload of blood clam is transported from Kakinada to southern Tamilnadu districts for use in shell craft industry.

Prospects and constraints in clam culture along Maharashtra Coast

Prospects

A wealth of information is available on distribution abundance, growth and spawning of cultivable species of clams of India Also the farming technology has been developed. In view of their amenability to culture, high production / unit area and growing demand, the clam culture has vast potential for development along Maharashtra coast. The advantages are given below.

1. Clams feed low in the food web on the detritus and phytoplankton and give high production / unit area.

2. They are efficient converters of

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Alsa Marine manages a 120 acre farm in Nellore, and is also an active participant in satellite farming. With a tie up with Biofeed Singapore, Alsa has brought in quality feed to the small and big farmers. Alsa Marine provides technology for different levels of culture activities; from the semi-intensive to extensive. Alsa Marine assists farmers in setting up of farms, right from selection of site to commercial operations and provides farm management assistance.

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primary production in to nutritious seafood, suitable for human consumption.

3. Clam culture is essentially a relating practice of collecting the seed from high density areas and stocking them in suitable grow out areas. The farm management involves periodic site inspection and eradication of predators. The technology is simple and easy for adoption by farmers.

4. Clam culture does not involves high labour or cost input.

5. Clam culture can easily be blended with capture fisheries and can be taken up as an income and employment generation program in rural areas.

6. In export market, there is demand for some species of clams. From India there is insatiable demand for frozen meat of clam Paphia malbarica.

7. In clam culture fertilizers and feeds are not used and it is ecofriendly clams are good biological filters and introduction of clams in areas of high eutrophication such as shrimp ponds helps to reduce pollution due to high load elf suspended matter.

8. After the outbreak of disease in shrimp farms, the farmers of Tamilnadu and Andhrapradesh have switched over to culture of clams.

Constraints

1. The major constraints for the large scale propagation of clam culture in Maharashtra is the absence of laws to allot the water bodies to the prospective farmers.

2. Mapping of sites suitable for clam culture, based on species site interaction are needed for a development of culture.

3. Consumption of clams is still localized, closed to the production centers and only the small section of the population take them as food they still remain as non conventional food.

4. Vigorous extension drive is needed to make them popular.

5. Unavailability of Clam seed Production Hatchery in Maharashtra so the fisherman has to depend upon the natural available clam seed which is unpredictable.

If the above constrains are removed in future. The development of the culturing of clams along the Maharashtra coast can become main earning source for the fisherman.

Japan's food labeling system faces reform

Legislation seeks to avoid future Snow Brand Foods debacles, where labels were falsified

The food-labeling system needs a thorough reform to eliminate the defects and loopholes exposed by the recent Snow Brand Foods Co., debacle, Agriculture, Forestry and Fisheries Ministry Tsutomu Takebe said at a press conference Friday. The ministry has set up a task force to review regulations concerning food labels indicating such factors as place of origin and expiration date, the minister said.

The task force will target legislative measures, such as revising the Japanese Agricultural Standards (JAS) Law, over which the ministry has jurisdiction, and incorporate the JAS law into the Food Sanitation Law, governed by the Health, Labor and Welfare Minister, the minister said.

What has surfaced as a result of the Snow Brand Foods scandal, in which the, is the fact that the fraud was apparently carried out with such ease.

Attaching such labels to food is mandatory under the JAS and food sanitation laws.

However, the production of labels had been outsourced to printers specializing in food labels. To make matters worse, no government authorities checked the accuracy of information on the labels.

Furthermore, under the JAS law, the punitive measure for a first offender is a mere "instruction," a measure equal to calling for precautions to be taken.

The standards for food expiry dates—which are mandatory under the food sanitation law—are set by the food manufacturing industry, not government authorities.

All in all, the standards governing the food labels are lax.

The ministry apparently planned to reform the food-labeling system with the health ministry by looking into such specific problems, the minister said.

His ministry also planned to set up another task force to monitor the safety of imported food, he said.

Take be said at the press conference, "We're determined to conduct a thorough review of the food-labeling system to win back consumer confidence."

Approval applies only to use of the drug for the indications and manner specified on the label.

An INAD exemption is not the same as approval; it merely temporarily permits research (under specific conditions) on an unapproved compound.

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New FDA powers to squeeze seafood industry

U.S. senators continued to discuss the fate of new bio-terrorism laws that could leave seafood importers in a lurch.

The legislation would add 410 full-time employees to the U.S. Food and Drug Administration's payroll, 210 of which would be designated for inspecting imported foods.

And that would mean increased detentions for imported seafood products and higher overall costs for importers.

That was the message delivered by some panelists discussing the new bill at a conference during this year's International Boston Seafood Show.

The Bioterrorism Preparedness Act of 2001, sponsored by Sens. Ted Kennedy (D-Mass.) and Bill Frist (R-Tenn.), is the Senate's version of new laws intended to protect consumers from deliberate acts of terror aimed at adulterating the food supply. The legislation was being discussed Tuesday in conference as the House and Senate negotiated their versions for a bill President Bush would sign, preferably before the Easter recess.

Justin LeBlanc, vice president government affairs for the National Fisheries Institute; Bob Collette, vice president science and technology for NFI; David Durkin, an attorney representing food companies' interests pertaining to the bill; and Caroline Smith DeWaal of the Center for Science in the Public Interest spoke during at a conference during this year's International Boston Seafood Show.

Last November, the Bush Administration sent the legislation to Congress calling for $20 billion to improve the ability of the United States to prepare for and respond to a biological threat or attack.

Of the $20 billion earmarked for overall security to the threat of bio-terrorism, the Bush Administration requested that the U.S. Food and Drug Administration receive $106 million, of which $61 million would go directly to food safety and food security.

At the time, NFI's President Richard Gutting said the implications of such a new law would have repercussions for the seafood industry.

"It's just a question as to how much damage will be done," he said.

The primary focus of the legislation as it pertains to FDA is the strengthening of imported food surveillance.

Other new authorities outlined in the bill include:

Emergency detention authority for imported foods for up to 30 days when a public health emergency is declared.

Debarment for companies that repeat or commit serious food import violations.

Maintenance and inspection of imported food records to facilitate 'tracebacks' when illnesses with food are identified. There are apparently varying degrees of protection for confidential company information, and, in some cases, according to LeBlanc, insufficient protection of confidential information.

Registration of food manufacturing, processing, and handling facilities, excluding restaurants, which LeBlanc is concerned may turn into an authorization to process food as opposed simply to registration.

One new power the FDA seems destined to achieve is the provision authorizing FDA to label imported products 'United States: Refused Entry' before allowing them to be re-exported, which LeBlanc believes creates a slew of problems for the food industry.

Labeling the product 'Refused Entry' not only seriously devalues the product but also the opportunities for the importer to re-export the product either back to the supplier for re-conditioning or to a third country, which may not have the same standards for certain pathogens, he said.

"NFI is vehemently opposed to this 'Refused Entry' provision," LeBlanc said.

But the intention of the measure is also to end the fraudulent practice of 'port shopping', where an importer's product is rejected at one port but then "shopped" around to another port in hopes that inspectors there won't sample the product allowing it entry into U.S. commerce.

Since a product immediately becomes substantially devalued once it is labeled 'Refused Entry', repackaging the product becomes an economically viable opportunity.

For instance, a product marked 'Refused Entry', once worth 70 cents on the dollar, is now worth just pennies, providing any buyer enough of a margin to pay the 25-30 cents to have the product taken out of the 'Refused Entry' pack and placed in another box.

The bill is expected to pass Congress before the Easter recess.

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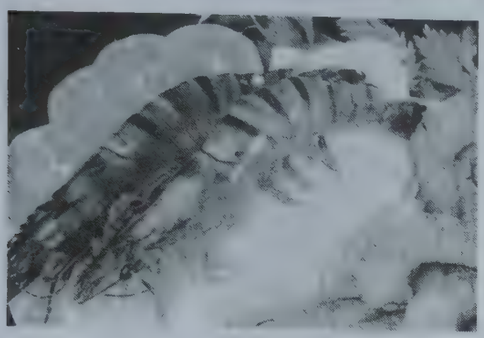
India's Seafood Export declines again



India's seafood export has declined again and the export figures of the period April - January 2001-2002 indicates -12.36% in dollar terms and -8.43% in Rupee terms and -1.38% in quantity over the same period of last year.

The total export during the 10 month period at US$ 1046.96 has declined -12.36% while comparing to the same period of last year which was US$ 1194.68.

Japan continues to be the major buyer of Indian seafood this year also. This accounts for 33.93%. This had declined from the 2264.79 of last year to 1681.35 this year. USA is the second major buyer of Indian seafood. This accounts for 23.78%.

Frozen shrimp is the major item of our export basket during April-January 2001-2002 contributing to 70-71% in value terms. Frozen finfish is the second major item and this contributes to 11.63%. In value terms Chennai port is on the top of seafood export activities with its share of 26.94%.

COUNTRY-WISE EXPORT OF MARINE PRODUCTS

Q:Quantity in M.tons
V:Value in Rs. Crores
$:US Dollar Million

COUNTRY	% share to Total	APRIL-JANUARY 2001-2002	APRIL-JANUARY 2000-2001	VARIATION	%
Japan	16.73 Q	57189	58064	-875	-1.51
	33.93 V	1681.35	2264.79	-583.44	-25.76
	33.93 $	355.22	499.99	-144.77	-28.95
USA	11.70 Q	39977	34905	5072	14.53
	23.78 V	1178.34	1017.64	160.70	15.79
	23.78 $	248.95	224.66	24.29	10.81
European Union	18.21 Q	62241	52267	9974	19.08
	17.15 V	849.75	796.76	52.99	6.65
	17.15 $	179.53	175.90	3.63	2.06
CHINA	31.35 Q	107133	141253	-34120	-24.16
	9.68 V	479.52	636.36	-156.84	-24.65
	9.68 $	101.31	140.49	-39.18	-27.89
South East Asia	12.62 Q	43133	31626	11507	36.39
	8.44 V	418.13	382.61	35.53	9.29
	8.44 $	88.34	84.47	3.87	4.58
Middle East	4.26 Q	14561	11739	2822	24.04
	2.88 V	142.70	138.61	4.09	2.95
	2.88 $	30.15	30.60	-0.45	-1.47
OTHERS	5.13 Q	17517	16686	830	4.98
	4.15 V	205.80	174.79	31.01	17.74
	4.15 $	43.48	38.59	4.89	12.67
TOTAL	100.00 Q	341751	346541	-4790	-1.38
	100.00 V	4955.60	5411.56	-455.96	-8.43
	100.00 $	1046.96	1194.68	-147.72	-12.36

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ITEM-WISE EXPORT OF MARINE PRODUCTS

UV$: Unit Value in US$ per Kg

ITEMS	%share to Total	APRIL-JANUARY 2001-2002	APRIL-JANUARY 2000-2001	VARIATION	(%)
Frozen Shrimp	30.71 Q	104945	94024	10921	11.61
	70.71 V	3504.35	3874.58	-370.24	-9.56
	70.71 $	740.36	855.37	-115.01	-13.45
	UV$	7.05	9.10	-2.05	-22.53
Frozen Fin fish	41.26 Q	140992	161535	-20543	-12.72
	11.63 V	576.33	661.72	-85.39	-12.90
	11.63 $	121.76	146.08	-24.32	-16.65
	UV$	0.86	0.90	-0.04	-4.44
Frozen Cuttlefish	7.57 Q	25860	29086	-3226	-11.09
	4.75 V	235.21	248.38	-13.18	-5.30
	4.75 $	49.69	54.83	-5.14	-9.37
	UV$	1.92	1.89	0.03	1.59
Frozen Squid	9.04 Q	30879	28335	2544	8.98
	5.16 V	255.81	253.93	1.87	0.74
	5.16 $	54.04	56.06	-2.02	-3.60
	UV$	1.75	1.98	-0.23	-11.62
Dried items	1.40 Q	4793	4716	77	1.63
	1.10 V	54.58	47.34	7.24	15.30
	1.10 $	11.53	10.45	1.08	10.33
	UV$	2.41	2.22	0.19	8.56
Live items	0.36 Q	1214	1526	-312	-20.47
	0.58 V	28.82	33.09	-4.28	-12.92
	0.58 $	6.09	7.31	-1.22	-16.69
	UV$	5.02	4.79	0.23	4.80
Chilled items	0.74 Q	2528	3002	-473	-15.77
	0.95 V	47.32	55.63	-8.32	-14.95
	0.95 $	10.00	12.28	-2.29	-18.65
	UV$	3.95	4.09	-0.14	-3.42
Others	8.94 Q	30540	24316	6223	25.59
	5.11 V	253.20	236.88	16.32	6.89
	5.11 $	53.49	52.29	1.20	2.29
	UV$	1.75	2.15	-0.40	-18.60
Total	100.00 Q	341751	346541	-4790	-1.38
	100.00 V	4955.60	5411.56	-455.96	-8.43
	100.00 $	1046.96	1194.68	-147.72	-12.36
	UV$	3.06	3.45	-0.39	-11.30

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Contact Persons

Mr. R. Sreenivasan
Chairman & Managing Director
Tel.:(Resi.) : 022-5165112

Mr. R. Narayana Murthy
Executive Director
Tel.:(Resi.) : 0251-326624
Pager No. : 9628-215296

PORTWISE-EXPORT OF MARINE PRODUCTS

Ports	%share to total	APR- JAN 2001 - 2002	APR- JAN 2000 - 2001	VARIATION	(%)
CHENNAI	10.15 Q	34688	30463	4225	13.87
	26.94 V	1335.05	1531.24	-196.20	-12.81
	26.94 $	282.05	338.05	-55.99	-16.56
KOCHI	16.76 Q	57289	77009	-19720	-25.61
	14.53 V	719.89	851.33	-131.44	-15.44
	14.53 $	152.09	187.94	-35.85	-19.08
VIZAG	5.63 Q	19224	20161	-937	-4.65
	13.61 V	674.33	871.90	-197.57	-22.66
	13.61 $	142.47	192.49	-50.02	-25.99
J N P	19.55 Q	66815	65592	1224	1.87
	10.43 V	516.76	485.38	31.38	6.47
	10.43 $	109.18	107.15	2.02	1.89
CALCUTTA	4.64 Q	15870	16650	-781	-4.69
	9.48 V	470.04	553.49	-83.45	-15.08
	9.48 $	99.30	122.19	-22.89	-18.73
TUTICORIN	4.15 Q	14183	15142	-959	-6.33
	7.65 V	379.32	432.05	-52.73	-12.21
	7.65 $	80.14	95.38	-15.24	-15.98
PIPAVAV	17.94 Q	61316	39993	21322	53.31
	5.62 V	278.41	183.30	95.11	51.88
	5.62 $	58.82	40.47	18.35	45.34
KAKINADA	1.31 Q	4477	0	4477	0.00
	3.73 V	184.72	0.00	184.72	0.00
	3.73 $	39.03	0.00	39.03	0.00
KANDLA	7.66 Q	26184	35080	-8895	-25.36
	3.04 V	150.73	217.75	-67.02	-30.78
	3.04 $	31.84	48.07	-16.23	-33.76
PORBANDAR	6.07 Q	20736	21873	-1136	-5.20
	1.66 V	82.12	86.41	-4.29	-4.96
	1.66 $	17.35	19.08	-1.73	-9.07
MUMBAI	1.37 Q	4684	11482	-6797	-59.20
	1.48 V	73.40	144.38	-70.99	-49.17
	1.48 $	15.51	31.87	-16.37	-51.36
MANGALORE/ICD	1.56 Q	5318	3328	1990	59.81
	0.78 V	38.71	16.22	22.49	138.66
	0.78 $	8.18	3.58	4.60	128.49
GOA	2.46 Q	8396	8248	148	1.80
	0.59 V	29.43	24.33	5.10	20.96
	0.59 $	6.22	5.37	0.85	15.83

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TRIVANDRUM	0.16 Q	563	372	191	51.39
	0.30 V	14.73	10.03	4.70	46.92
	0.30 $	3.11	2.21	0.90	40.72
KARWAR	0.59 Q	2007	1149	858	74.64
	0.16 V	7.96	3.73	4.23	113.45
	0.16 $	1.68	0.82	0.86	104.88
PARADEEP	0.00 Q	0	0	-0	-100.00
	0.00 V	0.00	0.01	-0.01	-100.00
	0.00 $	0.00	0.00	0.00	0.00
Total	100.00 Q	341751	346541	-4790	-1.38
	100.00 V	4955.60	5411.56	-455.96	-8.43
	100.00 $	1046.96	1194.68	-147.72	-12.36

COUNTRY-WISE EXPORT OF MARINE PRODUCTS

COUNTRY	% share to Total	JAN-2002	JAN-2001	VARIATION	%
Japan	9.65 Q	4014	4231	-217	-5.13
	21.51 V	100.36	125.15	-24.79	-19.81
	21.51 $	20.90	26.80	-5.89	-21.98
USA	10.40 Q	4325	3307	1018	30.78
	26.80 V	125.02	88.84	36.18	40.72
	26.80 $	26.04	19.02	7.02	36.91
European Union	16.29 Q	6776	5718	1058	18.51
	20.86 V	97.30	75.91	21.40	28.19
	20.86 $	20.27	16.25	4.01	24.68
CHINA	42.01 Q	17470	12154	5316	43.74
	14.25 V	66.48	50.14	16.34	32.59
	14.25 $	13.85	10.74	3.11	28.96
South East Asia	12.82 Q	5329	2212	3117	140.93
	10.09 V	47.08	31.55	15.53	49.23
	10.09 $	9.81	6.76	3.05	45.12
Middle East	4.23 Q	1761	1381	380	27.50
	2.63 V	12.29	15.00	-2.70	-18.03
	2.63 $	2.56	3.21	-0.65	-20.25
OTHERS	4.59 Q	1910	1218	692	56.86
	3.86 V	18.01	9.34	8.67	92.84
	3.86 $	3.75	2.00	1.75	87.50
TOTAL	100.00 Q	41584	30220	11364	37.60
	100.00 V	466.54	395.91	70.63	17.84
	100.00 $	97.18	84.78	12.40	14.62

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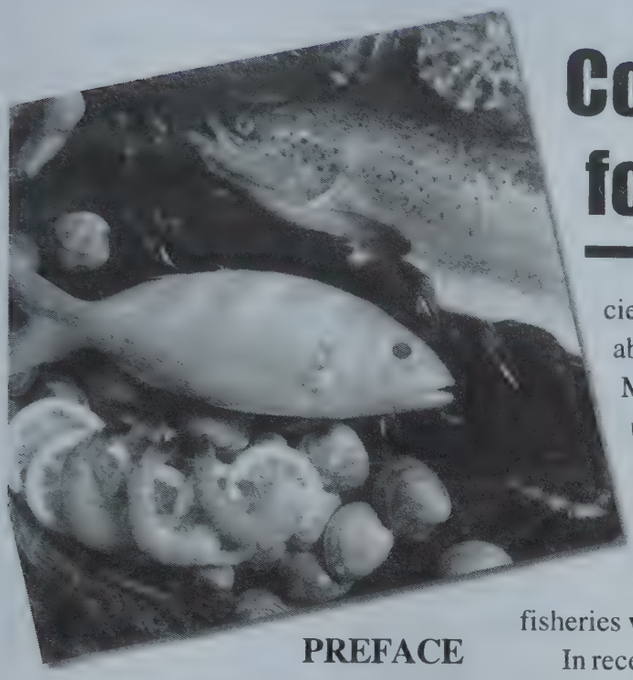


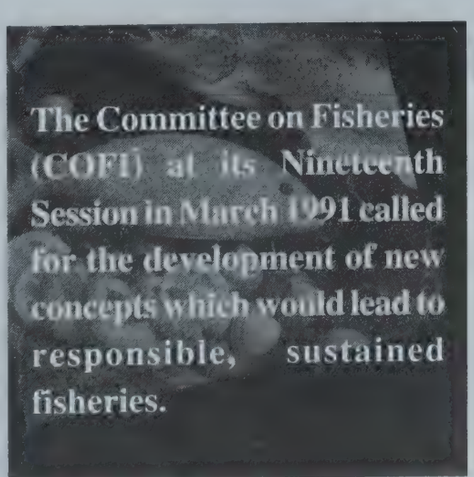
Code of Conduct for Responsible Fisheries

PREFACE

From ancient times, fishing has been a major source of food for humanity and a provider of employment and economic benefits to those engaged in this activity. The wealth of aquatic resources was assumed to be an unlimited gift of nature. However, with increased knowledge and the dynamic development of fisheries after the second world war, this myth has faded in face of the realization that aquatic resources, although renewable, are not infinite and need to be properly managed, if their contribution to the nutritional, economic and social well-being of the growing world's population is to be sustained.

The widespread introduction in the mid-seventies of exclusive economic zones (EEZs) and the adoption in 1982, after long deliberations, of the United Nations Convention on the Law of the Sea provided a new framework for the better management of marine resources. The new legal regime of the ocean gave coastal States rights and responsibilities for the management and use of fishery resources within their EEZs which embrace some 90 percent of the world's marine fisheries. Such extended national jurisdiction was a necessary but insufficient step toward the efficient management and sustainable development of fisheries. Many coastal States continued to face serious challenges as, lacking experience and financial and physical resources, they sought to extract greater benefits from the fisheries within their EEZs.

In recent years, world fisheries have become a market-driven, dynamically developing sector of the food industry and coastal States have striven to take advantage of their new opportunities by investing in modern fishing fleets and processing factories in response to growing international demand for fish and fishery products. By the late 1980s it became clear, however, that fisheries resources could no longer sustain such rapid and often uncontrolled exploitation and development, and that new approaches to fisheries management embracing conservation and environmental considerations were urgently needed. The situation was aggravated by the realization that unregulated fisheries on the high seas, in some cases involving straddling and highly migratory fish species, which occur within and outside EEZs, were becoming a matter of increasing concern.


The Committee on Fisheries (COFI) at its Nineteenth Session in March 1991 called for the development of new concepts which would lead to responsible, sustained fisheries.

The Committee on Fisheries (COFI) at its Nineteenth Session in March 1991 called for the development of new concepts which would lead to responsible, sustained fisheries. Subsequently, the International Conference on Responsible Fishing, held in 1992 in Cancûn (Mexico) further requested FAO to prepare an international Code of Conduct to address these concerns. The outcome of this Conference, particularly the Declaration of Cancûn, was an important contribution to the 1992 United Nations Conference on Environment and Development (UNCED), in particular its Agenda 21. Subsequently, the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks was convened, to which FAO provided important technical back-up. In November 1993, the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas was adopted at the Twenty-seventh Session of the FAO Conference (Annex 1).

Noting these and other important developments in world fisheries, the FAO Governing Bodies recommended the formulation of a global Code of Conduct for Responsible Fisheries which would be consistent with these instruments and, in a non-mandatory manner, establish principles and standards applicable to the conservation, management and development of all fisheries. The Code, which was unanimously adopted on 31 October 1995 by

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the FAO Conference, provides a necessary framework for national and international efforts to ensure sustainable exploitation of aquatic living resources in harmony with the environment (Annex 2).

FAO, in accordance with its mandate, is fully committed to assisting Member States, particularly developing countries, in the efficient implementation of the Code of Conduct for Responsible Fisheries and will report to the United Nations community on the progress achieved and further action required.

INTRODUCTION

Fisheries, including aquaculture, provide a vital source of food, employment, recreation, trade and economic well being for people throughout the world, both for present and future generations and should therefore be conducted in a responsible manner. This Code sets out principles and international standards of behaviour for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity. The Code recognises the nutritional, economic, social, environmental and cultural importance of fisheries, and the interests of all those concerned with the fishery sector. The Code takes into account the biological characteristics of the resources and their environment and the interests of consumers and other users. States and all those involved in fisheries are encouraged to apply the Code and give effect to it.

1 - NATURE AND SCOPE OF THE CODE

1.1 This Code is voluntary. However, certain parts of it are based on relevant rules of international law, including those reflected in the United Nations Convention on the Law of the Sea of 10 December 1982[1]. The Code also contains provisions that may be or have already been given binding effect by means of other obligatory legal instruments amongst the Parties, such as the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, 1993, which, according to FAO Conference resolution 15/93, paragraph 3, forms an integral part of the Code.

1.2 The Code is global in scope, and is directed toward members and non-members of FAO, fishing entities, sub-regional, regional and global organizations, whether governmental or non-governmental, and all persons concerned with the conservation of fishery resources and management and development of fisheries, such as fishers, those engaged in processing and marketing of fish and fishery products and other users of the aquatic environment in relation to fisheries.

1.3 The Code provides principles and standards applicable to the conservation, management and development of all fisheries. It also covers the capture, processing and trade of fish and fishery products, fishing operations, aquaculture, fisheries research and the integration of fisheries into coastal area management.

1.4 In this Code, the reference to States includes the European Community in matters within its competence, and the term fisheries applies equally to capture fisheries and aquaculture.

This Code is voluntary. However, certain parts of it are based on relevant rules of international law, including those reflected in the United Nations Convention on the Law of the Sea of 10 December 1982.

ARTICLE 2 - OBJECTIVES OF THE CODE

The objectives of the Code are to:

a. establish principles, in accordance with the relevant rules of international law, for responsible fishing and fisheries activities, taking into account all their relevant biological, technological, economic, social, environmental and commercial aspects;

b. establish principles and criteria for the elaboration and implementation of national policies for responsible conservation of fisheries resources and fisheries management and development;

c. serve as an instrument of reference to help States to establish or to improve the legal and institutional framework required for the exercise of responsible fisheries and in the formulation and implementation of appropriate measures;

d. provide guidance which may be used where appropriate in the formulation and implementation of international agreements and other legal instruments, both binding and voluntary;

e. facilitate and promote technical, financial and other cooperation in conservation of fisheries resources and fisheries management and development;

f. promote the contribution of fisheries to food security and food quality, giving priority to the nutritional needs of local communities;

g. promote protection of living aquatic resources and their environments and coastal areas;

h. promote the trade of fish and fishery products in conformity with relevant international rules and avoid the use of measures that constitute

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hidden barriers to such trade;

i. promote research on fisheries as well as on associated ecosystems and relevant environmental factors; and

j. provide standards of conduct for all persons involved in the fisheries sector.

3 - RELATIONSHIP WITH OTHER INTERNATIONAL INSTRUMENTS

3.1 The Code is to be interpreted and applied in conformity with the relevant rules of international law, as reflected in the United Nations Convention on the Law of the Sea, 1982. Nothing in this Code prejudices the rights, jurisdiction and duties of States under international law as reflected in the Convention.

3.2 The Code is also to be interpreted and applied:

a. in a manner consistent with the relevant provisions of the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks;

b. in accordance with other applicable rules of international law, including the respective obligations of States pursuant to international agreements to which they are party; and

c. in the light of the 1992 Declaration of Cancun, the 1992 Rio Declaration on Environment and Development, and Agenda 21 adopted by the United Nations Conference on Environment and Development (UNCED), in particular Chapter 17 of Agenda 21, and other relevant declarations and international instruments.

4 - IMPLEMENTATION, MONITORING AND UPDATING

4.1 All members and non-members of FAO, fishing entities and relevant subregional, regional and global organizations, whether governmental or non-governmental, and all persons concerned with the conservation, management and utilization of fisheries resources and trade in fish and fishery products should collaborate in the fulfilment and implementation of the objectives and principles contained in this Code.

4.2 FAO, in accordance with its role within the United Nations system, will monitor the application and implementation of the Code and its effects on fisheries and the Secretariat will report accordingly to the Committee on Fisheries (COFI). All States, whether members or non-members of FAO, as well as relevant international organizations, whether governmental or non-governmental should actively cooperate with FAO in this work.

4.3 FAO, through its competent bodies, may revise the Code, taking into account developments in fisheries as well as reports to COFI on the implementation of the Code.

4.4 States and international organizations, whether governmental or non-governmental, should promote the understanding of the Code among those involved in fisheries, including, where practicable, by the introduction of schemes which would promote voluntary acceptance of the Code and its effective application.

FAO, in accordance with its role within the United Nations system, will monitor the application and implementation of the Code and its effects on fisheries and the Secretariat will report accordingly to the Committee on Fisheries

5 - SPECIAL REQUIREMENTS OF DEVELOPING COUNTRIES

5.1 The capacity of developing countries to implement the recommendations of this Code should be duly taken into account.

5.2 In order to achieve the objectives of this Code and to support its effective implementation, countries, relevant international organizations, whether governmental or non-governmental, and financial institutions should give full recognition to the special circumstances and requirements of developing countries, including in particular the least-developed among them, and small island developing countries. States, relevant intergovernmental and non-governmental organizations and financial institutions should work for the adoption of measures to address the needs of developing countries, especially in the areas of financial and technical assistance, technology transfer, training and scientific cooperation and in enhancing their ability to develop their own fisheries as well as to participate in high seas fisheries, including access to such fisheries.

6 - GENERAL PRINCIPLES

6.1 States and users of living aquatic resources should conserve aquatic ecosystems. The right to fish carries with it the obligation to do so in a responsible manner so as to ensure effective conservation and management of the living aquatic resources.

6.2 Fisheries management should promote the maintenance of the quality, diversity and availability of fishery resources in sufficient quantities for present and future generations in the context of food security, poverty alleviation and sustainable development. Management measures should not only ensure the conservation of target species but also of species belonging to the same ecosystem or associated with

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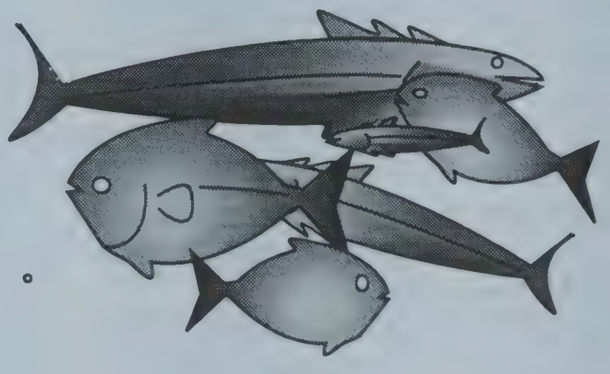

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or dependent upon the target species.

6.3 States should prevent overfishing and excess fishing capacity and should implement management measures to ensure that fishing effort is commensurate with the productive capacity of the fishery resources and their sustainable utilization. States should take measures to rehabilitate populations as far as possible and when appropriate.

6.4 Conservation and management decisions for fisheries should be based on the best scientific evidence available, also taking into account traditional knowledge of the resources and their habitat, as well as relevant environmental, economic and social factors. States should assign priority to undertake research and data collection in order to improve scientific and technical knowledge of fisheries including their interaction with the ecosystem. In recognizing the transboundary nature of many aquatic ecosystems, States should encourage bilateral and multilateral cooperation in research, as appropriate.

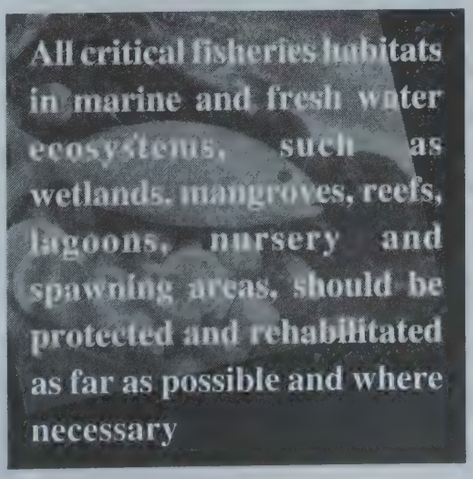
6.5 States and subregional and regional fisheries management organizations should apply a precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment, taking account of the best scientific evidence available. The absence of adequate scientific information should not be used as a reason for postponing or failing to take measures to conserve target species, associated or dependent species and non-target species and their environment.

6.6 Selective and environmentally safe fishing gear and practices should be further developed and applied, to the extent practicable, in order to maintain biodiversity and to conserve the population structure and aquatic ecosystems and protect fish quality. Where proper selective and environmentally safe fishing gear and practices exist, they should be recognized and accorded a priority in establishing conservation and management measures for fisheries. States and users of aquatic ecosystems should minimize waste, catch of non-target species, both fish and non-fish species, and impacts on associated or dependent species.

6.7 The harvesting, handling, processing and distribution of fish and fishery products should be carried out in a manner which will maintain the nutritional value, quality and safety of the products, reduce waste and minimize negative impacts on the environment.

6.8 All critical fisheries habitats in marine and fresh water ecosystems, such as wetlands, mangroves, reefs, lagoons, nursery and spawning areas, should be protected and rehabilitated as far as possible and where necessary. Particular effort should be made to protect such habitats from destruction, degradation, pollution and other significant impacts resulting from human activities that threaten the health and viability of the fishery resources.

6.9 States should ensure that their fisheries interests, including the need for conservation of the resources, are taken into account in the multiple uses of the coastal zone and are integrated into coastal area management, planning and development.


All critical fisheries habitats in marine and fresh water ecosystems, such as wetlands, mangroves, reefs, lagoons, nursery and spawning areas, should be protected and rehabilitated as far as possible and where necessary

6.10 Within their respective competences and in accordance with international law, including within the framework of subregional or regional fisheries conservation and management organizations or arrangements, States should ensure compliance with and enforcement of conservation and management measures and establish effective mechanisms, as appropriate, to monitor and control the activities of fishing vessels and fishing support vessels.

6.11 States authorizing fishing and fishing support vessels to fly their flags should exercise effective control over those vessels so as to ensure the proper application of this Code. They should ensure that the activities of such vessels do not undermine the effectiveness of conservation and management measures taken in accordance with international law and adopted at the national, subregional, regional or global levels. States should also ensure that vessels flying their flags fulfil their obligations concerning the collection and provision of data relating to their fishing activities.

6.12 States should, within their respective competences and in accordance with international law, cooperate at subregional, regional and global levels through fisheries management organizations, other international agreements or other arrangements to promote conservation and management, ensure responsible fishing and ensure effective conservation and protection of living aquatic resources throughout their range of distribution, taking into account the need for compatible measures in areas within and beyond national jurisdiction.

6.13 States should, to the extent permitted by national laws and regulations, ensure that decision making processes are transparent and achieve timely solutions to urgent matters.

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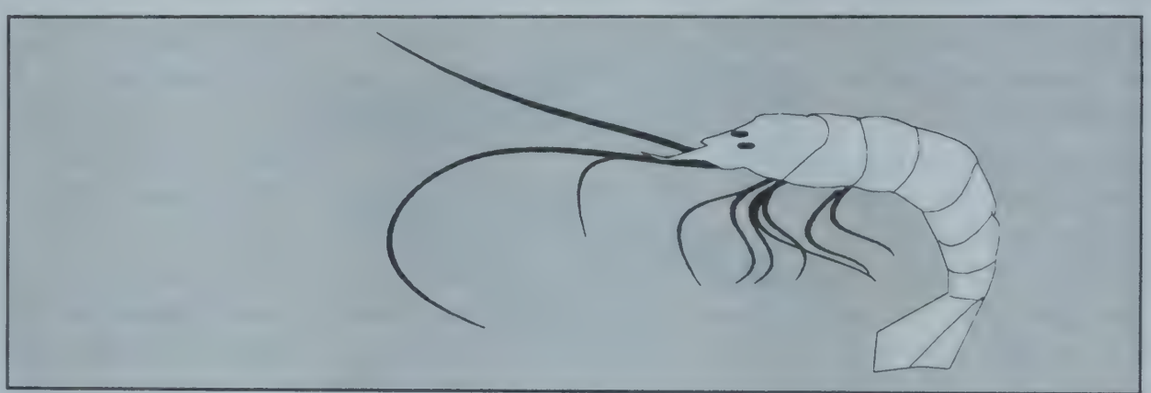

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States, in accordance with appropriate procedures, should facilitate consultation and the effective participation of industry, fishworkers, environmental and other interested organizations in decision making with respect to the development of laws and policies related to fisheries management, development, international lending and aid.

6.14 International trade in fish and fishery products should be conducted in accordance with the principles, rights and obligations established in the World Trade Organization (WTO) Agreement and other relevant international agreements. States should ensure that their policies, programmes and practices related to trade in fish and fishery products do not result in obstacles to this trade, environmental degradation or negative social, including nutritional, impacts.

6.15 States should cooperate in order to prevent disputes. All disputes relating to fishing activities and practices should be resolved in a timely, peaceful and cooperative manner, in accordance with applicable international agreements or as may otherwise be agreed between the parties. Pending settlement of a dispute, the States concerned should make every effort to enter into provisional arrangements of a practical nature which should be without prejudice to the final outcome of any dispute settlement procedure.

6.16 States, recognising the paramount importance to fishers and fishfarmers of understanding the conservation and management of the fishery resources on which they depend, should promote awareness of responsible fisheries through education and training. They should ensure that fishers and fishfarmers are involved in the policy formulation and implementation process, also with a view to facilitating the implementation of the Code.

6.17 States should ensure that fishing facilities and equipment as well as all fisheries activities allow for safe, healthy and fair working and living conditions and meet internationally agreed standards adopted by relevant international organizations.

6.18 Recognizing the important contributions of artisanal and small- scale fisheries to employment, income and food security, States should appropriately protect the rights of fishers and fishworkers, particularly those engaged in subsistence, small-scale and artisanal fisheries, to a secure and just livelihood, as well as preferential access, where appropriate, to traditional fishing grounds and resources in the waters under their national jurisdiction.

6.19 States should consider aquaculture, including culture-based fisheries, as a means to promote diversification of income and diet. In so doing, States should ensure that resources are used responsibly and adverse impacts on the environment and on local communities are minimized.

7 - FISHERIES MANAGEMENT

7.1 General

7.1.1 States and all those engaged in fisheries management should, through an appropriate policy, legal and institutional framework, adopt measures for the long-term conservation and sustainable use of fisheries resources. Conservation and management measures, whether at local, national, subregional or regional levels, should be based on the best scientific evidence available and be designed to ensure the long-term sustainability of fishery resources at levels which promote the objective of their optimum utilization and maintain their availability for present and future generations; short term considerations should not compromise these objectives.

States and all those engaged in fisheries management should, through an appropriate policy, legal and institutional framework, adopt measures for the long-term conservation and sustainable use of fisheries resources

7.1.2 Within areas under national jurisdiction, States should seek to identify relevant domestic parties having a legitimate interest in the use and management of fisheries resources and establish arrangements for consulting them to gain their collaboration in achieving responsible fisheries.

7.1.3 For transboundary fish stocks, straddling fish stocks, highly migratory fish stocks and high seas fish stocks, where these are exploited by two or more States, the States concerned, including the relevant coastal States in the case of straddling and highly migratory stocks, should cooperate to ensure effective conservation and management of the resources. This should be achieved, where appropriate, through the establishment of a bilateral, subregional or regional fisheries organization or arrangement.

7.1.4 A subregional or regional fisheries management organization or arrangement should include representatives of States in whose jurisdictions the resources occur, as well as representatives from States which have a real interest in the fisheries on the resources outside national jurisdictions. Where a subregional or regional fisheries management organization or arrangement exists and has the competence to establish conservation and management measures, those States should cooperate by becoming a member of such organization or a participant in such arrangement, and actively participate in its work.

7.1.5 A State which is not a member of a subregional or regional fisheries management organization or is not a participant in a subregional or regional fisheries management arrangement should nevertheless cooperate, in accordance with relevant international agreements and international law, in the conservation and management of the relevant fisheries resources by giving effect to any conservation and management measures adopted by such organization or arrangement.

7.1.6 Representatives from relevant organizations, both governmental and non-governmental, concerned with fisheries should be afforded the opportunity to take part in meetings of subregional and regional fisheries management organizations and arrangements as observers or otherwise, as appropriate, in accordance with the procedures of the organization or arrangement concerned. Such representatives should be given timely access to the records and reports of such meetings, subject to the procedural rules on access to them.

7.1.7 States should establish, within their respective competences and capacities, effective mechanisms for fisheries monitoring, surveillance, control and enforcement to ensure compliance with their conservation and management measures, as well as those adopted by subregional or regional organizations or arrangements.

7.1.8 States should take measures to prevent or eliminate excess fishing capacity and should ensure that levels of fishing effort are commensurate with the sustainable use of fishery resources as a means of ensuring the effectiveness of conservation and management measures.

7.1.9 States and subregional or regional fisheries management organizations and arrangements should ensure transparency in the mechanisms for fisheries management and in the related decision-making process.

7.1.10 States and subregional or regional fisheries management organizations and arrangements should give due publicity to conservation and management measures and ensure that laws, regulations and other legal rules governing their implementation are effectively disseminated. The bases and purposes of such measures should be explained to users of the resource in order to facilitate their application and thus gain increased support in the implementation of such measures.

7.2 Management objectives

7.2.1 Recognizing that long-term sustainable use of fisheries resources is the overriding objective of conservation and management, States and subregional or regional fisheries management organizations and arrangements should, inter alia, adopt appropriate measures, based on the best scientific evidence available, which are designed to maintain or restore stocks at levels capable of producing maximum sustainable yield, as qualified by relevant environmental and economic factors, including the special requirements of developing countries.

7.2.2 Such measures should provide inter alia that:

a. excess fishing capacity is avoided and exploitation of the stocks remains economically viable;

b. the economic conditions under which fishing industries operate promote responsible fisheries;

c. the interests of fishers, including those engaged in subsistence, small-scale and artisanal fisheries, are taken into account;

d. biodiversity of aquatic habitats and ecosystems is conserved and endangered species are protected;

e. depleted stocks are allowed to recover or, where appropriate, are actively restored;

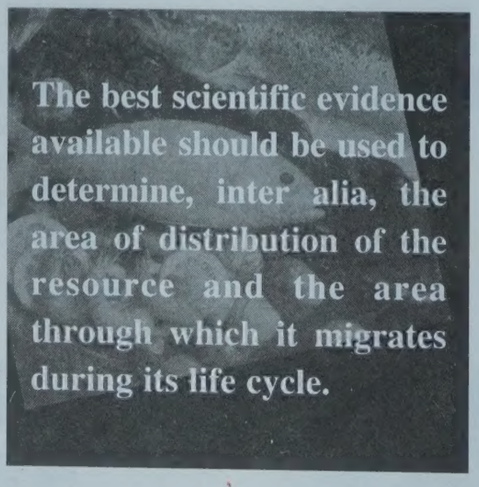
f. adverse environmental impacts on the resources from human activities are assessed and, where appropriate, corrected; and

g. pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non- fish species, and impacts on associated or dependent species are minimized, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost-effective fishing gear and techniques.

7.2.3 States should assess the impacts of environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks, and assess the relationship among the populations in the ecosystem.

7.3 Management framework and procedures

7.3.1 To be effective, fisheries management should be concerned with the whole stock unit over its entire area of distribution and take into account previously agreed management measures established and applied in the same region, all removals and the biological unity and other biological characteristics of the stock. The best scientific evidence available should be used to determine, inter alia, the area of distribution of the resource and the area through which it migrates during its life cycle.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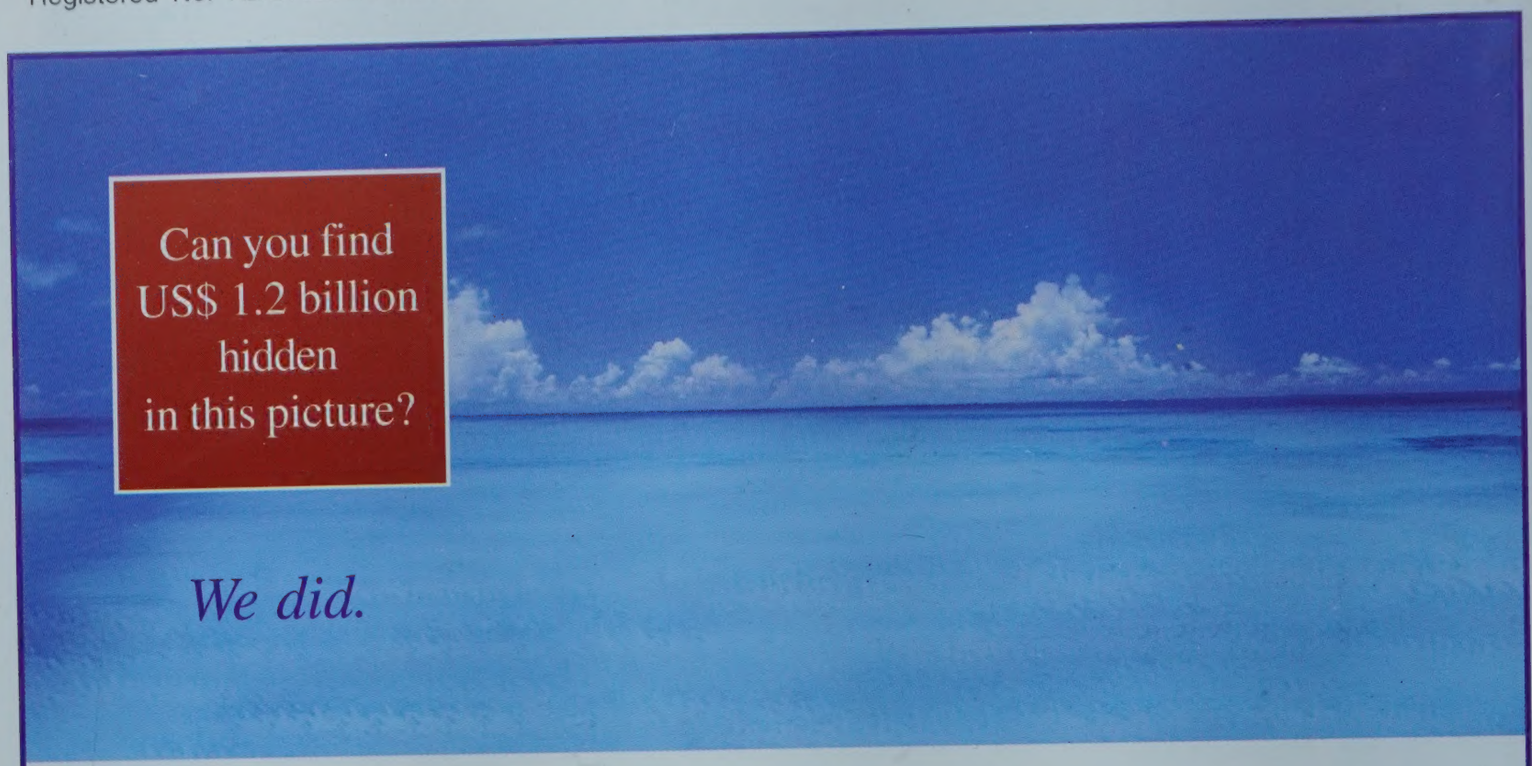

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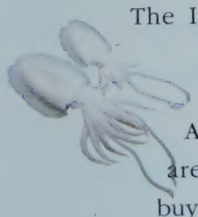

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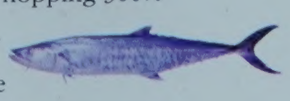

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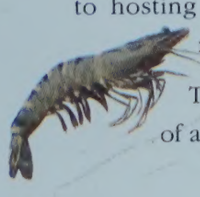

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